

## Claims

- [c1] A power supply system for an automotive vehicle comprising:  
a first power source having a first positive terminal and a first negative terminal;  
a second power source having a second positive terminal and a second negative terminal;  
a common electrical node between the first power source and the second power source;  
a first load coupled between said first positive terminal and said common node;  
a second load coupled to said first positive terminal;  
said switch coupled to said second positive terminal, said second negative terminal and said inverter, said switch having a first position electrically coupling said second load to said second positive terminal and a second position electrically coupling said second negative terminal to said second load;  
and  
a controller coupled to said switch controlling the switching of said switch in response to a predetermined condition.
- [c2] A power supply system as recited in claim 1 wherein the predetermined condition comprises the second power source being charged.
- [c3] A power supply system as recited in claim 2 further comprising a sensor coupled to said first terminal of said second power source and said controller.
- [c4] A power supply system as recited in claim 1 wherein the first power source and the second power source are disposed with a housing.
- [c5] A power supply system as recited in claim 4 wherein said switch is disposed within the housing.
- [c6] A power supply system as recited in claim 1 wherein the second power source comprises a capacitor.
- [c7] A power supply system as recited in claim 6 wherein said capacitor comprises an ultra capacitor.
- [c8] A power supply system as recited in claim 6 further comprising a service

discharge circuit coupled to said capacitor.

- [c9] A power supply system as recited in claim 8 wherein said service discharge circuit is coupled in parallel to said capacitor.
- [c10] A power supply system as recited in claim 8 wherein said service discharge circuit comprises a switch selectively coupling an inverter capacitor to said capacitor.
- [c11] A power supply system as recited in claim 1 wherein the common node is coupled to a chassis ground.
- [c12] A power supply system as recited in claim 1 wherein the second terminal of the first power source is coupled to a chassis ground.
- [c13] A power supply system as recited in claim 1 wherein said second load comprises an inverter and a motor.
- [c14] A power supply system as recited in claim 1 wherein said first power source has a first voltage rating and said second power source has a second voltage rating equal to said first voltage rating.
- [c15] A method of operating an electrical system for an automotive vehicle comprising:  
operating a first load with a first power source;  
electrically coupling a first power source and a second power source; and  
selectively coupling a first terminal or a second terminal of a second power source to an inverter in response to a sensed condition.
- [c16] A method as recited in claim 15 wherein selectively coupling comprises selectively coupling in response to a charge of the second power source.
- [c17] A method as recited in claim 15 wherein electrically coupling the first power source and the second power source comprises forming a common node between said first power source, said second power source.
- [c18] A method as recited in claim 15 further comprising discharging the second power source prior to servicing.

- [c19] A method as recited in claim 18 wherein discharging comprises coupling the second power source to a load.
- [c20] A power supply system for an automotive vehicle comprising:  
a first power source having a first positive terminal and a first negative terminal;  
a second power source having a second positive terminal and a second negative terminal;  
a common electrical node between the first power source and the second power source;  
a first load coupled between said first positive terminal and said common node;  
an inverter coupled to said first positive terminal.
- [c21] an integrated motor generator coupled to said inverter  
said switch coupled to said second positive terminal, said second negative terminal and said inverter, said switch having a first position electrically coupling said inverter to said second positive terminal and a second position electrically coupling said second negative terminal to said inverter; and  
a controller coupled to said switch controlling the switching of said switch in response to a predetermined condition.